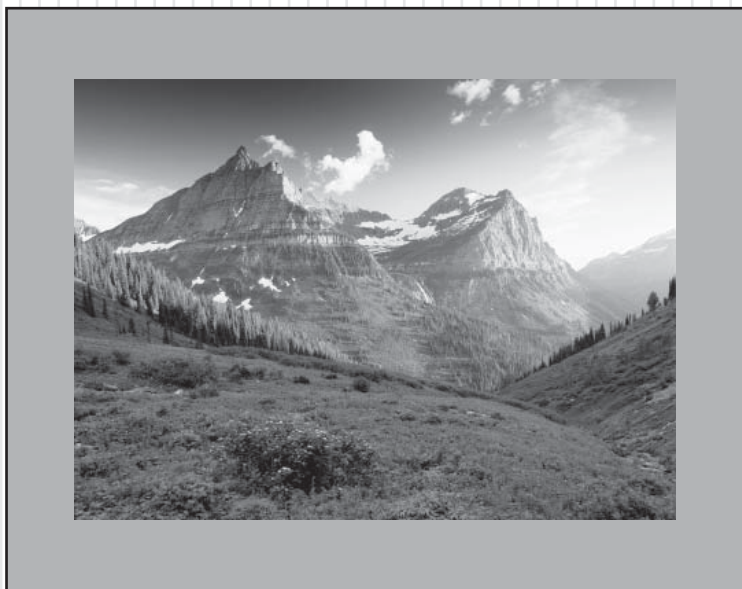


Montana
Comprehensive Assessment
System (MontCAS, Phase 2)
Criterion-Referenced Test (CRT)

COMMON CONSTRUCTED-RESPONSE ITEM RELEASE
MATHEMATICS, GRADE 6

2009



OFFICE OF PUBLIC INSTRUCTION

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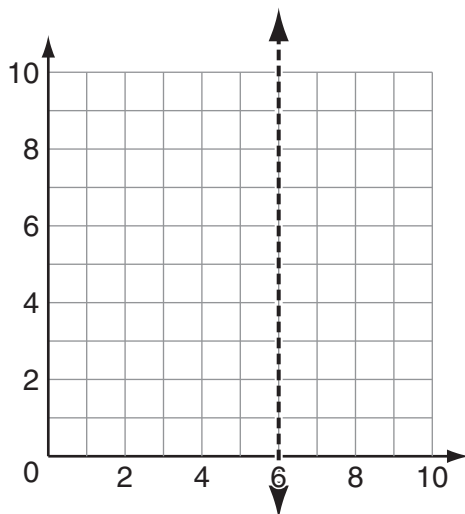
Mathematics

Session 1 (No Calculator)

You may NOT use a calculator during this session.

Write your answer in the space provided for it in your Student Response Booklet. Show all of your work.

23. Copy the coordinate grid below into your Student Response Booklet. Include the dotted line at $x = 6$.



a. The coordinates of the vertices of triangle DEF are given below.

- $D (3, 10)$
- $E (5, 8)$
- $F (3, 7)$

Draw triangle DEF on your grid. Be sure to label each vertex with the appropriate letter.

- b. Draw the image of triangle DEF after it is reflected over the dotted line. Name the new triangle HIJ so that H is the image of D and I is the image of E .
- c. Another triangle, MNO , is created by translating triangle DEF . The vertices of the new triangle are $M (1, 6)$, $N (3, 4)$, and $O (1, 3)$.

Describe the translation that moves triangle DEF to triangle MNO . Be sure to list the directions and distances that are used in the translation.

Scoring Guide

Score	Description
4	10 points
3	8–9 points
2	5–7 points
1	1–4 points
0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.
Blank	No response.

Scoring Notes

Part a: (maximum 3 points)

1 point for each correctly graphed and labeled vertex

Part b: (maximum 3 points)

1 point for each correctly graphed and labeled vertex

OR

2 points for 3 correctly graphed vertices, but no coordinates are labeled or with coordinate labels that are not in the correct order

Part c: (maximum 4 points)

1 point for the correct horizontal direction, **left**

AND

1 point for the correct horizontal distance, **2 (units)**

AND

1 point for the correct vertical direction, **down**

AND

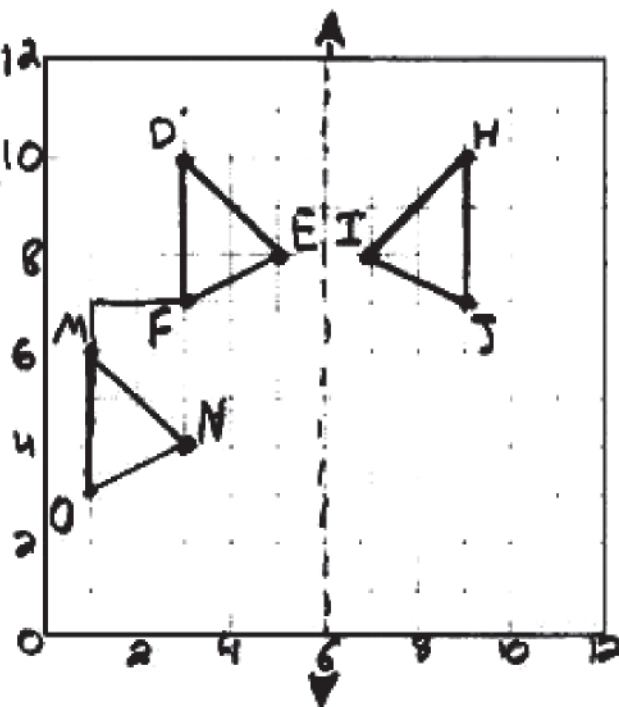
1 point for the correct vertical distance, **4 (units)**

Sample Response:

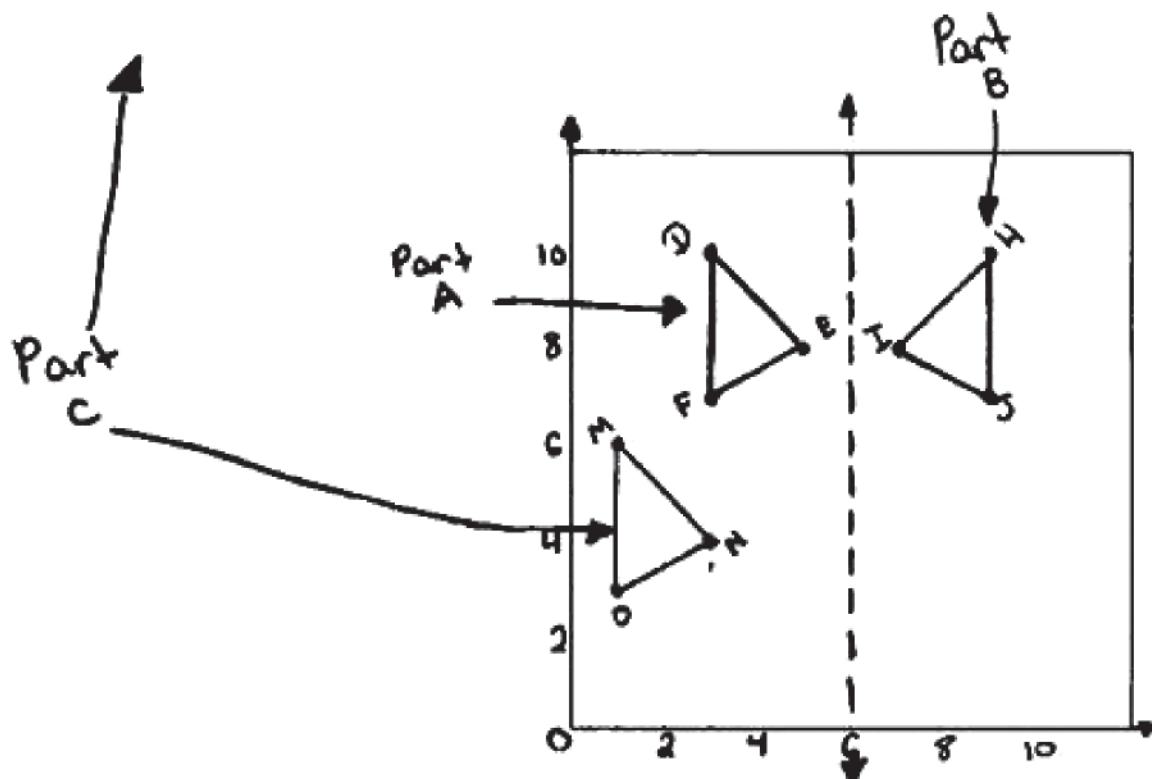
- Student correctly plots triangle DEF with coordinates D (3, 10), E (5, 8), and F (3, 7).
- Student correctly plots triangle HIJ with coordinates H (9, 10), I (7, 8), and J (9, 7).
- The triangle was translated 2 units to the left, and 4 units down.

Note: A student that does not draw a triangle in parts a and/or b cannot receive a 4 score. Otherwise do not penalize.

The translation that moves triangle DEF to triangle MNO has many steps. 1. Move point F from (3,7) to (1,7) then move it down to (1,3) and name it point O. Do the same movement with all the other points, left 2, down 4, ex. When you're done you would have translated DEF to MNO successfully.



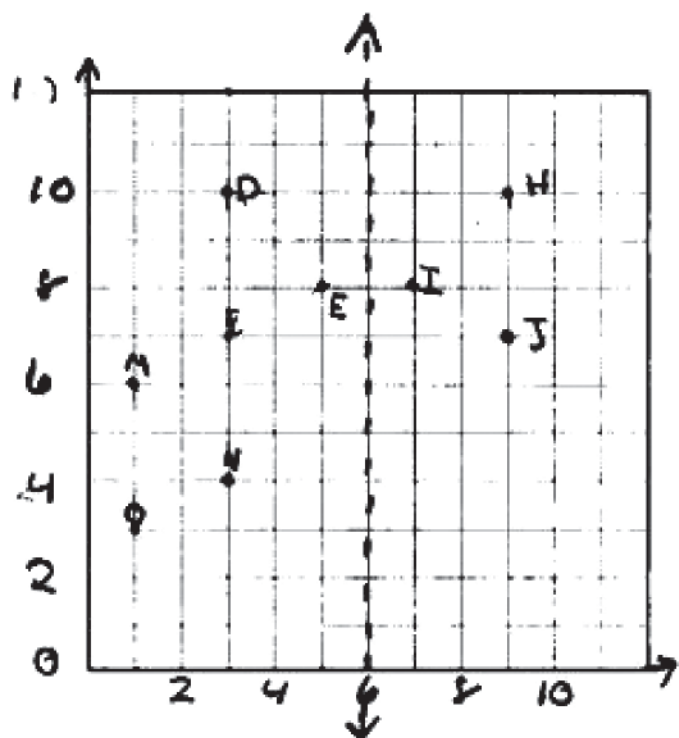
Triangle DEF has been translated to where triangle MNO is. It got there by each vertex going 2 squares to the left and 4 squares down.



Score Point 3

Sample 1

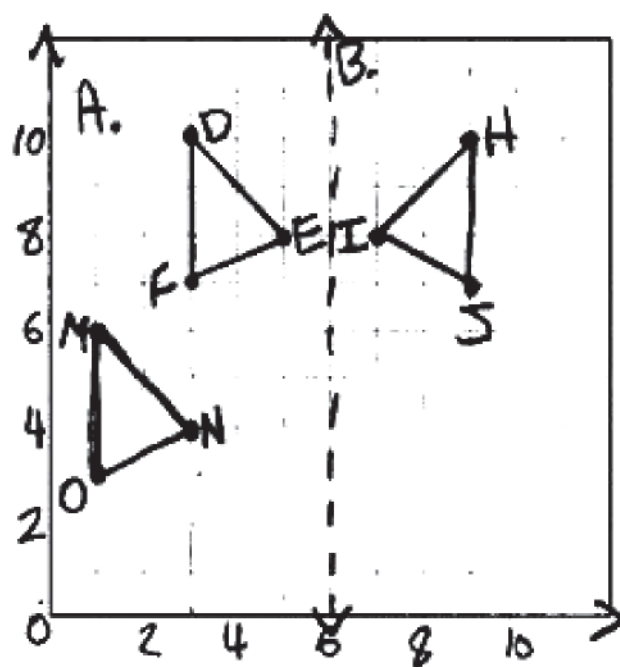
It was flipped down, and slid left.



Score Point 3

Sample 2

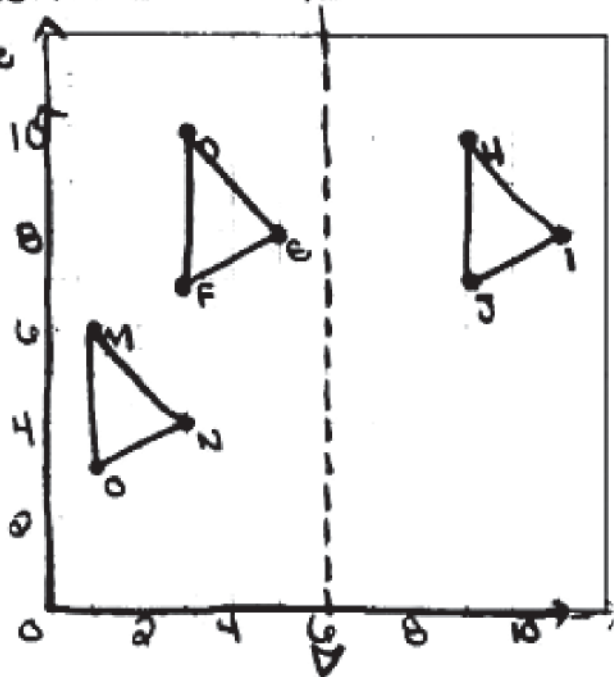
C. Translation: you pick it up and move it down 4 and over 2 squares



To move triangle DEF to MNO you would move diagonally down 4.
 You would land in the bottom, left hand side of the coordinate grid. The triangle slides down diagonally.

You could also move it by sliding down your triangle until point D reaches (3,6).

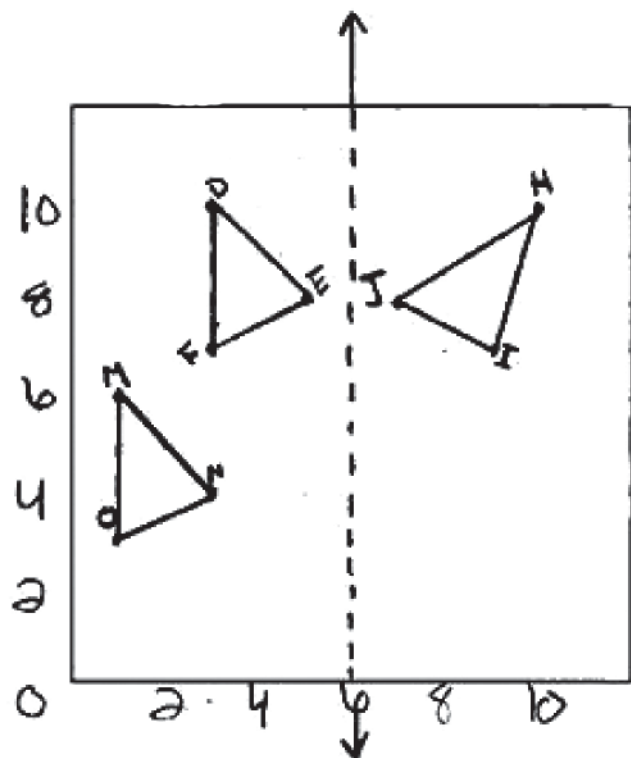
You would then slide it over to the left until point D is on (1,6), point E is on (3,4), and point F is on (1,3). These points would change into M, N, O.



Score Point 2

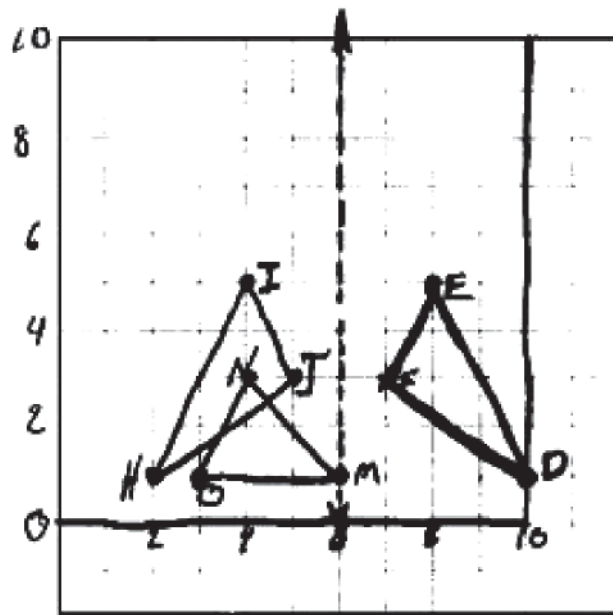
Sample 2

C. In moving Triangle DEF to Triangle MNO you must
move Down 4 squares and left 2 squares.



Score Point 1

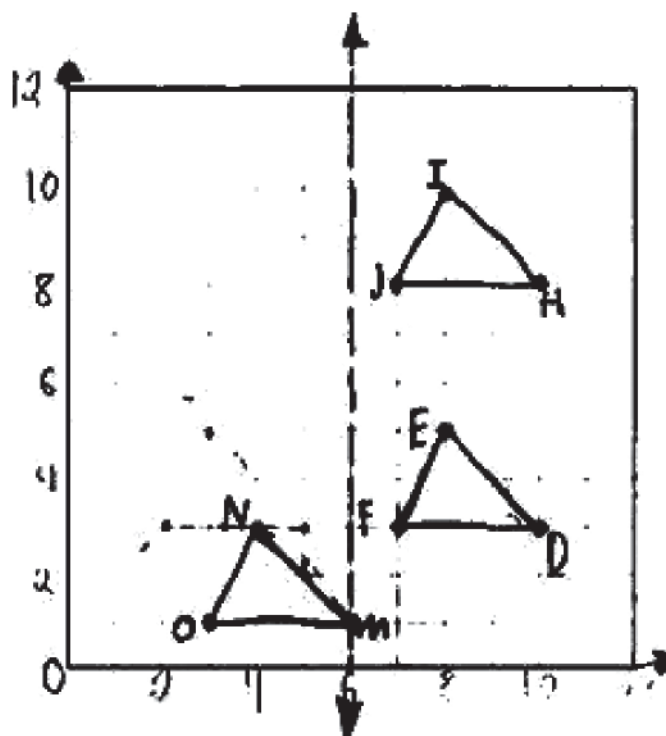
Sample 1



Score Point 1

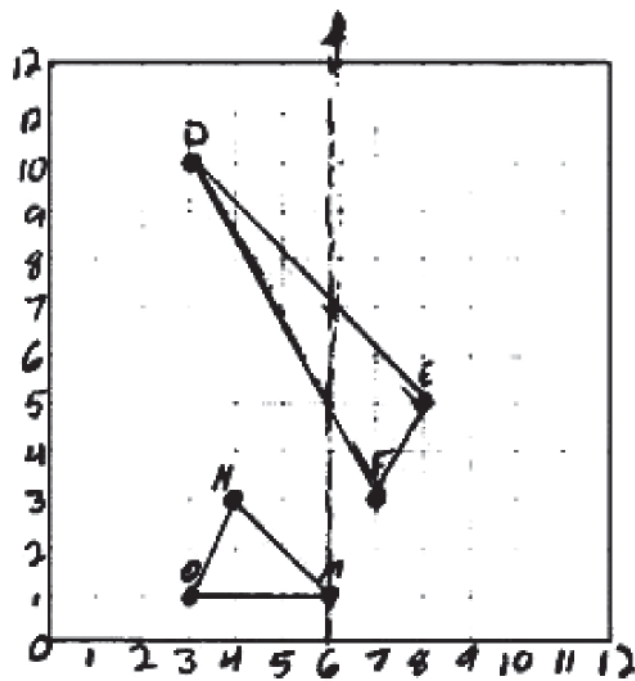
Sample 2

It went down 2 cm and was moved over
to the left about 4 cm.



Score Point 1

Sample 3



Score Point 0

Sample 1

DEF are translated to MNO because it just moves from 10,8,7 to 6,6 and does not hit 1 any time and it is also bigger.

I did not get what the question is asking so I guessed.

